Vol. VIII MAY, 1897 No. 5

The National Geographic Magazine

AN ILLUSTRATED MONTHLY

CONTENTS

WASHINGTON
PUBLISHED BY THE NATIONAL GEOGRAPHIC SOCIETY

Agents in the United States and Canada:

THE AMERICAN NEWS COMPANY, 39 and 41 CHAMBERS STREET, NEW YORK.
Price, Postpaid, 25 Cents or $2.50 a Year

Entered at the Post-Office in Washington, D. C., as Second-Class Mail Matter.

Price 25 Cents $2.50 a Year

THE

National Geographic Society

ORGANIZED, JANUARY, 1888

SECRETARY'S OFFICE, 1517 H STREET N. W., WASHINGTON

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Richard Worsam Meade
Rear Admiral U.S. Navy.

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A WINTER VOYAGE THROUGH THE STRAITS OF MAGELLAN*

BY THE LATE ADMIRAL R. W. MEADE, U. S. N.

Some twenty-six years ago I received peremptory orders to assume command of the *Narragansett* and sail forthwith to the Pacific station. We left Sandy Hook on the first blast of a nor'wester which followed on the heels of a March equinoctial, being the first steamer of the navy to leave the port of New York with stunsails set alow and aloft and no steam up. Whether it was this tribute to Boreas that brought us good fortune I do not know, but we made a famous run to the Line, where, Neptune having come on board and duly shaved and ducked several score greenhorns, our luck for the time deserted us, and for the next two or three weeks the ship fanned along with light airs and tedious calms, until the fortieth day out saw us safely in the beautiful harbor of Rio de Janeiro, tinkering away at a wretched old pair of engines which had broken down when we tried to use them to steam into harbor.

Resuming our cruise, we were favored by a sea as smooth as glass and with the most charming weather imaginable. But there is a cry of "Land ho!" from aloft, and what we see proves to be Mount Wood, a solitary peak of moderate elevation on the coast of Patagonia, and in the vicinity of the very Port San Julian where Magellan wintered his ships, about 200 miles north of the straits. As we approach the land it seems a pleasanter-looking coast than many I have seen; and though, no doubt, we

*Abstract of a lecture delivered before the National Geographic Society, December 4, 1896.

see it under most favorable circumstances of wind and weather. I incline to the belief that the popular idea in regard to the dreariness and forbidding character of the shores of Patagonia is a delusion which the commerce of the future will dispel. The day after we made Mount Wood the weather became thick and the wind squally, and, not being able to see the land, we ran by the land. When near Cape Virgins by our reckoning the barometer commenced to rise. Now a rise in the glass in this latitude (50° south), the barometer having previously stood low, is an almost certain indication of a change of wind, if not bad weather; so all hands were called to reef topsails. Scarcely had the second reef boats taken in when the wind shifted in a moment from the north landward (N.N.E. to W.S.W.) and blew in furious gusts, the horizon suddenly cleared, the mists were dispelled, the air became cold and raw, and by the rays of the setting sun (it was now 3 o'clock of a June day) we saw in the distance Cape Virgins, with its abrupt, cliff-like shore, 16 miles dead to windward of us. Thus far we had made the voyage from New York entirely under sail, ships of war not being expected to steam unless necessary. We managed, with the aid of fore-and-aft canvas, to crawl slowly to windward, and, there being a bright, full moon, crossed the great Sarmiento bank, south of Cape Virgins, where the rise of the tide is 42 feet, and by 11 o'clock that night were safely at anchor in the straits, some four miles west of Magellan's landfall.

To make our voyage intelligible it will here be necessary to describe the general character of the strait. It is safe to say that there is no other part of the world where, as a rule, the weather is so tempestuous and dangerous as it is off Cape Horn. There old Ocean exerts his full sovereignty, and the winds and the waves are almost ceaselessly raging and surging in wild tumult against a bleak, forbidding, iron-bound coast. The climate of Cape Horn is the most wretched on earth. Fierce storms of rain, hail, and snow drift in from the Atlantic, Antarctic, and Pacific oceans in everlasting succession, broken only by the furious willi-waws or Cape Horn squalls.

The real difficulties of the voyage commence at Cape Froward, the southern extremity of our continent, which is 175 miles from Cape Virgins. Here the weather undergoes an entire change, and no matter how pleasant it has been before, the mariner may expect to don his "sou'wester" the moment he doubles this precipitous headland, worthy of terminating so grand a continent.

ORIGINAL MAP SHOWING THE PRINCIPAL POINTS OF THE STRAITS OF MAGELLAN

For steamers and smart sailing schooners the voyage through is merely one of ordinary care and prudence, but for square-rigged sailing craft the difficulties are almost insuperable; yet one large sailing ship, the frigate *Pisagua*, went through in the astonishing time of 17 days!

From Cape Virgins to Cape Pillar the distance by the usual route is 315 nautical miles, and to traverse this from the eastward every course between W.N.W. and S.S.E. must, at one time or other, be steered, and as the wind is persistently west or southwest (or always dead ahead), the difficulties to the sailing ship are readily seen. Moreover, the character of the strait changes materially as the voyager goes west, for to the eastward of Cape Froward, as a rule, the weather is better, the sun shines brighter, anchorages are more convenient, and the dangers of navigation fewer in number.

The strait may be geographically divided as follows: (1) From Cape Virgins to Elizabeth island, the termination of the second narrows, 95 miles, where the tides are very strong, the rise and fall extraordinary (45 feet), the land comparatively low and entirely destitute of timber, the weather generally good, and anchorages safe and convenient. (2) From Elizabeth island, where trees first make their appearance and the land commences to rise, to Cape Froward, 80 miles. Here anchorages are frequent and safe, timber is plentiful, the tides are weak (not exceeding 6 feet), and the weather is comparatively pleasant. (3) From Cape Froward to Cape Quod, 50 miles, with anchorages few and far between, currents strong and in places dangerous, weather almost constantly tempestuous, mountains of great height and bare of vegetation, their peaks covered with snow or ice, natives savage and dangerous, and voyaging even in steamers attended with risk. Lastly, from Cape Quod to the Pacific, 90 miles, where there are few anchorages, and some of these, as Port Mercy, dangerous in the extreme, there is very little tide, the weather is stormy nearly all the year, and the high mountains are covered with eternal snow—the land aptly termed by Sir John Narborough "Ye Land of Desolation."

When daylight came on the morning after our arrival we found ourselves anchored off a long, low spit of shingle called by the English navigators "Dungeness," from some fancied resemblance to the headland of that name in the English channel. To the eastward was Cape Virgins, not unlike the chalk cliffs of England. To the westward loomed Cape Possession, a bold,

dark-looking headland, while to the south, dimly visible in the gray of the morning, was Magellan's Land of Fire—a low, indented coast just rising above the distant horizon. The straits are 16 miles wide at this point. Following the usual rule of the mariner in these parts, we had prepared beforehand our tables for tides, snorter, and stream, the light yards and topgallant masts were struck, all stuns'ls and booms sent on deck, and everything made snug aloft for stemming against the strong westerly winds we expected to encounter. But our apprehensions of bad weather proved groundless. The southwester had blown out, and the day broke calm and comparatively clear. The sun shone out of a leaden-hued sky with just warmth enough to be pleasant, and, weighing our anchor with a favorable flood-tide we were soon passing the land at the rate of 13 knots an hour, though the engineer would have gone wild if anyone had suggested to him the possibility of the *Nieuwgroendt's* engines driving her over 8 knots. The rise and fall of the tide in this part of the strait is very great. It is no less than 43 feet, and a singular circumstance attends the changes of the tidal stream. The flood, which runs with great velocity to the westward, commences about three hours before it is low water by the beach, and so here we were rapidly going west with the flood-tide while apparently the water was everywhere ebbing by the shore. Another feature in the tides east of Cape Froward is that the time of high water grows later as the ship proceeds to the westward, so that it is possible in a fast steamer, starting from Cape Virgins with a favorable flood, to reach the Chilean settlement at Sandy Point (110 miles) in a daylight run in June, which corresponds to our December.

As we pass Cape Possession the wind draws in fresh gusts from the northward and westward, and we set the fore-and-aft sails, which increases the vessel's speed to 14 knots. We rapidly approach the first narrows, for the low, cliff-like shores on each side are now plainly visible, and all hands are on deck to witness the terrific tide race we have heard so much about. By 10 o'clock we are fairly in the narrow pass, which is a perfectly straight "reach" of perpendicular wall-like shore, 9 miles long by 2 miles broad, with very deep water, precipitous beach at low tide, and a straight, rapid current of 8 knots an hour. We are fairly flying along the land, and by noon have made over 60 nautical miles since we started. We are clear of the narrows, dimly visible astern, and skirting the southern shore of Philip

bay. By 2 o'clock we are nearly up with the second narrows, but now the flood-tide is done, and it would be the merest folly to attempt to force the *Narragansett* through against the ebb, so we give up all hope of reaching Sandy Point this evening, and steam slowly in for the anchorage under Gregory Sandrat.

On the cliff abreast of the ship we observe a native camp and see some animals grazing on the downs. Soon there are other signs of life, and a dozen Indians come sweeping along on horseback. They are splendidly mounted and seem a fine, athletic race. Now they are on the edge of the bluff making signals to us, but it is too late to communicate with the shore, and, moreover, the character of "ye native" hereabouts is open to suspicion, though to do the Indians simple justice they have been rendered hostile to all white men by two centuries of brutality at the hands of the Spaniards and their descendants. As a people these Patagonians are less savage and intractable than the Fuegians or natives of the southern and western shores. There are in truth some very striking differences between these two races, and it may be well to allude to them here. In the first place, the term Patagonian, unless explained, is apt to mislead, for the whole of the continent south of the parallel of 40 degrees is known as Patagonia, and is geographically divided by the mountains into Eastern and Western Patagonia, inhabited, as far as we know, by two very different races, though Dr Darwin in his narrative of the *Beagle's* voyage in 1831 declares his conviction that they are the same race and that the present difference is caused by environment. This is probable, as food, climate, and environment are doubtless responsible for most racial differences; but, strictly speaking, the Patagonians are the natives of Eastern Patagonia, for the inhabitants of the islands along the Smyth channel (north of Magellan straits) and Western Patagonia as far as the Gulf of Peñas are of the same family as the natives of Tierra del Fuego, and are invariably designated as Fueglans. The Patagonians then inhabit the northern side of the strait east of Cape Froward and the chain of mountains known as the Southern Andes, and are probably of the same family as the Araucanians, so justly celebrated for their prowess in their encounters with the steel-clad warriors of Spain in the sixteenth century. Of these Patagonians, one explorer who passed some time with them says:

"They are very tall, finely formed, and athletic, with jet black eyes, black, coarse hair, thick lips, and a skin of reddish-brown color. They

[illegible]

[illegible]

"[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

The Islands have never been [illegible] except [illegible] the coast of [illegible] only.

Captain Mayne, who recently resurveyed those waters in H. B. M. ship Nassau, states that the natives spend most of their time in canoes, and make voyages from the straits to the Gulf of Peñas, [illegible]. Though usually few canoes are seen in passing through, it is extraordinary how rapidly a hundred or more will gather together if they see the [illegible] for making [illegible] or a wreck. "[illegible] the rendezvous [illegible]," says Captain Mayne, "the fires are seen smoking all along the coast for miles, and out of every creek [illegible] canoes will be seen [illegible] [illegible]." The canoes [illegible] graceful shape of the [illegible] canoes, these [illegible] craft are simply planks lashed together with the [illegible] of trees, without the slightest regard to form, and instead of being urged along by [illegible] they are rowed by [illegible] made of [illegible] tied to the end of a short pole. On the bottom of the boat, in the middle, is a small fire, and on each side of it are crouched some eight men, women or children, according to the size of the craft. These are generally, as we have said, almost entirely naked, the women appearing to care less about clothing than the men.

A very striking difference between these people and the Patagonians was observed by Captain Fitzroy in 1834, and subsequently by Captain Mayne in 1867. This is that while the Patagonian will generally drink all the rum he can get and is always more or less drunk when near a settlement, the Fuegian cannot be persuaded to drink, and if he is ever induced to taste strong liquor of any kind, will always put it away with a wry face. In fact, this is the [illegible] redeeming trait in these savages, who are [illegible] to be cannibals, for they have frequently attacked and [illegible] the crews of passing vessels.

The next morning we were under way with the first of the [illegible] and [illegible] through [illegible] Gregory into the second narrows. Up to [illegible] the scenery was [illegible] but [illegible] we first caught sight of the distant mountains to the southward, with their snowy peaks and glaciers. Passing the [illegible], we anchored [illegible] Punta Arenas, and soon after the [illegible] was in full view, [illegible] its white houses [illegible] of the

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] in the world, and I [illegible] after a long [illegible] experience at sea. Let those who have seen the sea forest [illegible] a league [illegible] thousand feet [illegible] to the rock [illegible] have an idea of the grandeur of Cape Froward. But we are now on the [illegible] stretch [illegible] San Francisco, [illegible] the ship [illegible] the pitch of the [illegible] closer [illegible] eastern shore [illegible] the fury of the west wind [illegible] of the force of which the white [illegible] seen on the [illegible] of Froward [illegible].

It was [illegible] dark when the ship reached Port [illegible] and anchored. This is the [illegible] in the strait, and [illegible] the principal [illegible] of [illegible]. There is no other good anchorage [illegible] known as Port [illegible], being accessible [illegible] vessels. The view from [illegible] is very fine. There are several pretty [illegible] Port [illegible] from [illegible] left, while Mount [illegible] covered with snow rises gradually to a height of [illegible] feet and completely overlooks the anchorage.

A few weeks before we arrived at Port [illegible] massacre the [illegible] an English steamer, the *Propontis*, having been murdered by the Fuegians while [illegible] water. On our arrival the Fuegians had [illegible] deserted that part of the strait. The governor [illegible] it impossible to [illegible] and the [illegible] concerned [illegible]. The fate of these men [illegible] should [illegible] warning to [illegible] vessels.

The next day was mostly occupied in making the run from Port [illegible] to [illegible] Bay, the wind being adverse and the tide strongly against us, but the beautiful scenery compensated for the [illegible] of the trip; it was by far the finest that we had yet seen. The serrated ranges of mountains [illegible]

[illegible]. The character of the strait seems to change entirely when [illegible], at the entrance to which [illegible] apparently [illegible] the strait, we [illegible] admire the grandeur and beauty of [illegible]. The ship [illegible] out the deep waters of [illegible] Island Bay [illegible] of [illegible] rises [illegible] 3000 feet above our heads. A [illegible] our [illegible] wake [illegible] the [illegible]. The scenery on [illegible] is very [illegible] under difficulties. The [illegible] and [illegible] three [illegible]

long rivulets fall down at different points. A peculiar feature of this place which is a favorite resort of ships is the great number of boards nailed to the trees, which serve as a [illegible] of the numerous vessels that in the last fifty years have touched here. A very conspicuous one drew our attention. It read: "[illegible] sloop of war *Dotterel*, June 11th, 1884. All well." [illegible] the [illegible] we have in the strait, one was finally towed through by the United States steamer Wachusett, Captain R. W. Meade, [illegible] of [illegible] Before leaving the *Narragansett's* board "35 days in the straits—all well" was posted upon the tree here.

The views at Borja bay, [illegible] from those at some other points, [illegible] of green grass and [illegible] and scented [illegible] their growth [illegible] half [illegible] was [illegible] the ship steamed westward past [illegible] cliff of El Morion [illegible] was at last fairly pointed for the great long reach to the Pacific.

The lights and shadows reflected by the moon upon the dark waters of the strait—deep almost unfathomable—the dark space under the overhanging cliffs of the lofty mountains, and the flood of silver moonlight that [illegible] rendered the scene one of surpassing beauty. The night was [illegible] quiet, the stars [illegible] with the [illegible] of the night [illegible] promised fair for a quick run to the Pacific. At [illegible] next morning we had passed [illegible] bay and the [illegible] dreary coast between it and the Spanish gulf with the [illegible] Cape Xaultegua, when a change in the weather became apparent. At 2 o'clock in the afternoon the Pacific ocean was only 35 miles off, but the long swell we now encountered and the stormy appearance of the weather compelled us to choose between a port of refuge or a stormy night in the open strait. Port Churruca, in Desolation island, seemed the best harbor and the ship bore up for the narrow entrance. There being no bridge on the *Narragansett* the captain took his place on the forecastle as pilot [illegible] the navigator* held the chart and [illegible] a tarpaulin over it to keep it from getting wet. Careful hands were in the chains and at the [illegible] and all hands were called to "bring ship to anchor." The steamer was heading for two small rocky islets, about 50 yards apart, slowly [illegible] through the [illegible] and mist of a driving squall. The surf broke fiercely all along the rocky shore. "Stand by! Let go!" says the captain from his lookout on the forecastle and slowly [illegible] No [illegible] bottom could be found [illegible] 200 fathoms of line. In a few [illegible]

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* Now Commander [illegible] U. S. N.

channel is descried leading apparently into the very bowels of the mountain which towers above. [illegible] "Port!" from the foremast [illegible]. "Port it is, sir!" from the quartermaster at the wheel, and the ship's head turns to starboard. [illegible]. All hands are at their stations, [illegible], and [illegible] silence [illegible] profound. We enter the passage, and [illegible] opened and found [illegible] as we thread our way through the narrow pass, some 200 yards wide, between the rocks and [illegible] upon which [illegible] dis[illegible]. Now we emerge into an inland sea, which [illegible] the [illegible] perpendicular walls of rock two or three thousand feet in height. The vessel [illegible] short round to port and [illegible] ahead toward a [illegible] where [illegible]. "By the mark seven!" comes from the chains, and the anchor is let go; hawsers are run from the ship to one of the few stunted trees to keep the vessel clear of the rocks, and the *[illegible]* is safely sheltered for the night.

[illegible] Narborough spoke [illegible] truly when he named this the "Land of Desolation." Nothing can be more gloomy or more desolate than the scenery in the neighborhood of this [illegible] anchorage, Port Churruca. The term port is a misnomer, for beyond the small coves, where anchorage may be obtained in from 15 to 25 fathoms of water, there is no bottom to be found with less than 100 fathoms of line, and in many places there are no soundings at all. The deep waters of the channels are bordered by awful precipices, broken by frightful chasms and ravines. There are a few stunted trees along the beach, but on the mountain sides not even the usual mosses or lichens—nothing but one slate-colored savage-looking rocks, covered with ice and snow. The place is fully sheltered, and all that night the ship lay profoundly quiet and in [illegible] of the storm, though the roar of the sea and the whistling of the furious west wind could be distinctly heard. A party left the ship before dark to explore the head of the little cove. They found [illegible] of vegetation in the gorge at the base of the cliff to which the ship was moored, and one of the explorers collected a bouquet of Fuegian flowers. The sailors, however, took greater [illegible] in the waterfall, found a bed of [illegible], upon which we all regaled ourselves that evening.

The next morning the weather [illegible] overcast, with rain squalls at intervals, was [illegible] favorable [illegible]

attempt to leave. Some of the officers seemed dubious of the steamer's ability to clear the strait, but the captain concluded to take the chances, and at noon Cape Pillar was in sight on the port bow.

With a full head of steam and the fore-and-aft canvas the ship made good way, and at 2 o'clock passed out of the strait and steered westerly for an offing. But both the wind and sea were now rapidly rising. At dark it was blowing a furious gale from the W.S.W., with one of the most furious head-rolling seas I ever saw. No chance to run back or find an anchorage [illegible] went on the lines. At times the squalls of wind, sleet and rain were so thick that we could not see a ship's length. There was nothing to do now but to "claw off" shore under every rag of storm canvas the vessel could carry, and trust to the engines to help us gain an offing. At 8 o'clock that night the hatches were all securely battened down, and the lee rail of the ship was under water as she struggled under sail and steam against the [illegible] sea. Directly astern, through the [illegible] squalls, was Cape Pillar, eight miles distant. On the lee bow were the black rocks of Los Apostoles, the ship [illegible] gradually southward in dangerous proximity to them. The wind veered constantly from point to point, and the squalls came with blinding [illegible] and terrific force, but everything held well, and a Providence which watches over "poor Jack" sent us a slant of wind which enabled us to make an offing during that dark and [illegible] night.

For eight long days and nights this state of things continued, the ship vainly struggling to get to the westward, the squalls of hail and snow [illegible] long [illegible] from [illegible] west while the vessel [illegible]. On the eighth day the vessel was only as far west as the parallel of Cape [illegible] with [illegible] Cape [illegible]. There were but a few tons of coal left and [illegible] miles from Valparaiso. Affairs looked [illegible]. Many of the men were worn out, exhausted by cold and fatigue; several of the officers were in the same condition.

But all ill fortune, as well as good fortune, must at some period come to an end, and so it happened that the next day the wind shifted to the south, and with strong and favoring gales the [illegible] was safely anchored in the harbor of Valparaiso. And never had

ADMIRAL F. W. MEALE, U. S. N.

[illegible] THE NATIONAL GEOGRAPHIC MAGAZINE will be sent to the printer in [illegible] and [illegible] that it would [illegible] and [illegible] of the art [illegible] "A Winter Voyage through the Straits of Magellan" would have [illegible] the long and interesting voyage of Admiral Meale, forming a narrative of some of the most interesting portions of his life and experiences in the Antarctic. It could be placed in the hands of our readers. On the first of May, however, [illegible] of a special question, from which the [illegible] has been disappointed by [illegible] permanently failed. [illegible] possible, [illegible] going to press, to present more than the briefest outline of Admiral Meale's distinguished career, to relate adequate [illegible] to his memory. It must suffice to recall some points of his [illegible] career as well as, of his heroic [illegible] of the [illegible] before he was 19 years of age, of his [illegible] of a naval vision, [illegible] with his service, and [illegible] he was 25, of the [illegible] of office [illegible] grant, and [illegible] that was for him, to [illegible] and again, [illegible] of his [illegible] of [illegible] causes of [illegible] in the [illegible] of his [illegible], [illegible] of [illegible] elevated naval tactics, of his [illegible] contributions to [illegible] literature, and of his ever welcome appearances in the Washington [illegible] society, of which he was a [illegible] member. The accompanying article [illegible] death of a man, whom we cannot regard as with [illegible] since, to "the Best [illegible] which watches over poor souls."

Himself has [illegible]

[illegible] of Admiral Meale's [illegible]

> "The [illegible] was [illegible]
> [illegible] work and [illegible]
> [illegible]
> [illegible]"

J. H.

COSTA RICA

BY SENOR DON GALDINO VILLAFRANCA

Commercial Attaché of the Embassy of Costa Rica at the Court of St. James

It is a pleasure to be able to give to the American public a little more than a mere description of the natural resources and industries. I can look forward to seeing in the near future the complete realization of the natural resources of the country and the natural development of the country.

The country is very favorably known to the outside world, and it might well be known as a health resort, because of the climate of the new world, and between the tropics and the temperate climate, with the advantages of a tropical country, and the advantages of such climate—that is generally known to people who are acquainted with the laws of health. The people are peaceful and law-abiding, the population is composed of exports from the United States, is very prosperous, the climate is moderate, without extremes of heat or cold, and is very healthful. The climate of the country is very healthy, especially on the coast, generally speaking, and rather low in the land, of which there is a lot in Costa Rica. Again, there are large areas which are high and of prolonged growing and healthful spots for—a great many years, where the flowers are very beautiful.

Costa Rica is free from the want of sufficient population, but is possessed of the advantage of an excellent population, and the population is very intelligent and industrious, and also very friendly to strangers.

The forests are all made up of tropical and semi-tropical woods. In the country the land is partly covered with great forests, among the finest in the world, and there are of a rare quality as mahogany, cedar, rosewood, figueria, etc., and a number of others, such as ash, etc. Little attention is given to the forest woods. A few years ago, when transportation is easy, some woods have been purchased, but for the present the trees stand as they did a hundred years ago.

In the Matina valley the Matina Company is working a vast rice plantation and paying large dividends. The exporting stations [illegible] hundreds of cars are loaded every day, and the number of boats loaded with bananas for strangers there are [illegible]

[illegible] of the government which [illegible] make Costa Rica the [illegible] of American republics.

Only a few years ago a few shanties marked the [illegible] of Limon, where to-day [illegible] port [illegible] by the Caribbean breezes. Here [illegible] and trees in the [illegible] overshadow [illegible] which are [illegible] rule now; the [illegible] are well kept, and [illegible] amusement are well attended. In Central America great prominence is given to churches, but at Limon they are not as elegant as in most Spanish cities. [illegible] are numerous, and [illegible] are popular [illegible] weekly [illegible] important, but the places of worship [illegible] of the [illegible] are of foreign design [illegible] foreign material. Limon has [illegible] features, but [illegible] settlements in the United States. English is the prevailing language, and English-speaking people control most of the business.

Nearly one-third of the population of the country is in the province of San José, a broad expanse containing the [illegible] plains [illegible] from the [illegible] where the [illegible] live. The wealthiest, most prosperous, and most conservative of the towns are Heredia and Alajuela, which are connected with the capital by a [illegible] road. What we shall say about San José applies more or less to all Costa Rican [illegible]. In this [illegible] neighborhood the country is studded with fruitful plantations. Here [illegible] the population of Costa Rica [illegible] here are found the hardy [illegible] who [illegible] the wealth of the soil. An air of ease combined with [illegible] the majority of these villages. The city of San José at once gives the impression of thrift [illegible] the cities of the United States. The traveler sees [illegible] houses, wide sidewalks, and electric lights. In the centre of Walker's park has recently been placed a handsome [illegible] Walker. [illegible] There are high schools, a school of law, several colleges, public libraries, etc. It is safe to say that the number of [illegible] in Costa Rica far exceeds the number of soldiers. The well-kept hotels, like most private residences, are built around a beautiful courtyard, upon which every room in the house receives [illegible]

flowers. [illegible] work and pay in the most dignified ways [illegible] the [illegible] amusement is often [illegible] and more

[illegible]

[illegible]

a bushel, varying from [illegible] cents, [illegible] from [illegible] [illegible]. This operation is a delicate one, and is watched very closely to prevent the leaves from being broken, as the next crop starts from the angle formed by the leaf and branch. The berries are then transported [illegible] carts, passed through a machine that breaks the outer skin, and are placed for twenty-four hours in water, during which the syrup-like substance that has adhered to the grains is washed away. After it has been washed the coffee is spread out on a cemented court to be dried by the sun. There it [illegible] [illegible] three weeks, but at night and during cloudy days it is gathered into heaps and covered with canvas. The process of spreading [illegible]

[illegible]ing. During this period the planter has to place sentinels around the coffee courts, as unroasted coffee in Costa Rica is worth 40 cents a pound, and a single individual might carry away several hundred dollars' worth of it in a few hours. When dry the coffee is sacked and transported to the factory, where a[illegible]

The final work is the separation of the broken and imperfect berries and classifying them. They are called first, second, third and fourth classes, and the well-known caracol [illegible] of [illegible]

[illegible] classes of coffee. From this machine the berries are [illegible] to large tables, where girls pick out by hand any impurities not removed by the machines. The coffee is then sacked [illegible] [illegible], each bag weighs 132 pounds. Now that the coffee is ready for export [illegible] [illegible] "Hamburg," "Havre," etc., a question naturally arises. Is there any marked "New York," "New Orleans," or "[illegible]"? I have to answer with deep regret that very little is marked that way, the bulk of the crop being bought by European firms, who, through their agents several months in advance of harvest time, [illegible] [illegible] for cash funds, with liberal [illegible], to farmers who agree to consign their crops. American merchants make very little effort to secure the products of Costa Rica or to furnish its markets with the manufactures and [illegible] which are produced in the United States.

Time does not permit me to speak of other agricultural productions. Costa Rica is capable of producing not only coffee, bananas, cocoa, and sugar-cane, but northern fruits and vegetables. There we find peaches, apples, quinces, strawberries, and

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

To visit the successful gold-mining properties there one has to ride over rough roads, crossing [illegible] rivers and traversing thick forests, where mahogany, cedar, rubber, and other tropical trees cover the earth and screen the skies. The journey is long and at times tiresome, but to see gold at the end of the journey [illegible] the [illegible] the days of toil and discomfort of travel. There is a region of a considerable amount of [illegible], but as in the past the mines have been worked in a most primitive way, necessitating great labor and expense. With the application of new labor-saving machines and improved methods, there is no doubt that we shall soon see golden streams flowing from the depths of Costa Rica.

Throughout the Republic transportation is largely conducted by oxcarts, with oxen as the motive power. The carts are clumsy, primitive vehicles made by the peasants, the wheels being solid round disks cut from the stems of large trees. The oxen are always objects of regard, as their drivers and owners have an almost superstitious love for them, and often prize them more than they do their own wives.

The railroad from San José to the Pacific coast is [illegible] and passes through a fertile agricultural country and several towns, among them Alajuela, which has an extensive market. At Alajuela we leave the train and reach Esparta, [illegible] miles from Puntarenas, on horseback. From Esparta, one of the oldest towns in Costa Rica, we again take the train to Puntarenas, which is the principal seaport on the Pacific and is connected by steamer with San Francisco.

It must be plain that Costa Rica offers inducements to emigrants which are many and varied. Men who have become [illegible] planters or in one of the many industries with a few hundred dollars can in a few years accumulate a reasonable property, and [illegible] in a region [illegible] world [illegible] and [illegible] Costa Rica is indeed a land of promise [illegible] in seeking for themselves a future prosperity [illegible] greater [illegible] casting their [illegible] eyes.

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*The pictures that accompany the description of [illegible] photographs [illegible] Señor Don Joaquin B. Calvo, Costa Rican [illegible]

[illegible]

[illegible]

[illegible]

been planted and planted to cotton. The successful growing of these crops requires such clean culture that, in the almost total neglect of crop rotation, [illegible] deprived of nearly all [illegible] matter, while the cotton plant furnishes few [illegible] root fibers to hold the soil together and prevent it from washing down into the valleys. When to this is added the fact that terrace plowing is almost unknown, it is readily seen that the rain [illegible] rapidly gathers into [illegible] finds its way down to the different streams, carrying with it an immense amount of sediment. The streams are soon overloaded, and along the more level stretches [illegible] drops the portion of the load that it cannot carry. [illegible] of old [illegible] often [illegible] ten feet or up [illegible] very heavy [illegible] stream overflows its banks [illegible] the rich [illegible] spreads desolation over almost [illegible]. In the case of small streams the [illegible] almost entirely from the [illegible] [illegible], completely [illegible] the stream's channel and [illegible] [illegible] water [illegible] and [illegible] but [illegible] [illegible] as it were, for [illegible] of [illegible].

[illegible] to note more fully the [illegible] of change [illegible] from its [illegible] to [illegible] state. As the stream bed is [illegible] and [illegible] and hence [illegible] [illegible] land [illegible] leading from [illegible] the stream [illegible], the drainage becomes poorer, and as a consequence the land is longer after overflows [illegible] sufficiently dry for cultivation. As the [illegible]

grade [illegible] the stream [illegible] the [illegible] bed [illegible] c, c, c', the water level in the soil [illegible] [illegible] the [illegible] the soil surface b b [illegible] decreases [illegible] through which capillary [illegible] water to the [illegible] roots and [illegible] water and [illegible] not [illegible] [illegible]. [illegible] to [illegible]

the [illegible] may yet for a short time furnish a rather poor meadow [illegible] pasturage. Little of the rich alluvial surface has yet been covered by the sand, most of which has been disposed of in filling the stream channel. It is as though the stream realized its inability to directly attack the surface at first and so turned to other and [illegible] preparations for a more effective attack and the latter [illegible] filling its channel with sand and thus placing itself in a position to enjoy its complete work of destruction when it is once actively begun. When at last its channel is sand filled almost even with the flood plain surface here the work of preparation ends and the work of direct destruction begins. Every overflow now cuts channels that lead away from the main stream, and spreads sand far and wide over the plain, burying the fertile soil. As the depth of the sand increases the flood plain becomes more barren, until it is finally a waste of sand thinly overgrown with [illegible] and other sand loving plants, while willows fringe the branching channels of the wandering stream, and beneath them [illegible]

with roots and [illegible]. The cycle of destruction is now complete.

Thus in some sections much of the formerly fertile bottom land has already been abandoned as worthless, much more can scarcely be cultivated profitably, while but little is so favorably situated as to escape entirely the ruinous effect of the continuous reckless cultivation of the hill slopes.

The remedy for this destruction is so simple and self-evident [illegible] as hardly to require statement; the cotton crop must be rotated with some crop that will furnish an abundance of root fibers to hold the soil together and prevent it from [illegible]ing and the hill slopes must be terraced [illegible]. If this is done the destruction of the hill fields and the aggradation of the bottom fields will be checked; if this is not done all the most fertile land will soon become but barren wastes.

Mention may be made of a lake of aggradation on the [illegible] creek [illegible] family, to be found in the northwestern part of Fairfield county, S. C., since it is due to the same general cause. From a small open [illegible] broad side valley that contained a weak stream draining but a small area. When the master stream began aggrading it set a pace with which the weaker stream could not keep up. Its mouth was sealed up, and it was forced to make [illegible] itself before gaining an exit. It is now covering to a depth of eight or ten feet a [illegible] that before the war had been planted in corn.

SHEIK SAID

The Sunday-school geographies of [illegible] placed a flag [illegible] of Aden. In looking over it I noticed that Sheik Said on the southwest coast of Arabia was given as French territory. This surprised me, as [illegible] map of the [illegible] gives it as an English possession, [illegible] Aden the center of a large territory, extending to the [illegible] Sheik Said. On consulting a German map I found it given neither as English nor French, but as a part of the province of the Yemen, and therefore Turkish. I then consulted M. [illegible], the general secretary of the [illegible] Geographical Society, who informed me that it was [illegible] French territory, although [illegible] occupied by a Turkish garrison. M. [illegible] having suggested certain authentic sources of information, I proceeded to make further investigations, and in view of the growing interest [illegible] I [illegible] the result to the readers of the National Geographic Magazine.

The territory of Bab-el-Mandeb was well known in the days of [illegible] as [illegible] an important port of Ocelis. The fall of the Roman power in Egypt and the Red Sea brought about that of Ocelis, [illegible] and trade with India went by way of the [illegible]. When in [illegible] the Red Sea regained its importance, it was Aden that was selected as the chief port. Since the downfall of the [illegible] the territory of Bab-el-Mandeb has been left to govern itself. It is inhabited by the tribe of the Akemi-ed-Dourein, who have always held their independence against the Turks. This independence was indirectly recognized both by Turkey and by England. It was of the sheik of the Akemi-ed-Dourein that the governor of Aden asked permission to dig wells on the territory of Bab-el-Mandeb to obtain water for the garrison of Perim. A Turkish vessel carrying [illegible] wrecked on the [illegible] coast south of Mokha, it was to the same sheik that her owner applied for help. In [illegible] an English vessel was wrecked on the coast of Bab-el-Mandeb and looted by the natives. The English governor of Aden applied to the kaimakam of Mokha for redress, but he was obliged to reply that the Turkish authority did not extend south of Mokha.

In October, 1868, the firm of Rabaud & Bazin, of Marseilles, entered into negotiations with the sheik of the Akemi-ed-Dourein, Ali Tabatt, and purchased from him a part of the territory of Bab-el-Mandeb, including the bay of Sheik Said and about 400,000 acres of land adjoining. Naturally England did not like to see France take possession of so important a point, and wishing to [illegible] France, [illegible] to have advised Turkey to occupy the territory [illegible]. [illegible] a small Turkish garrison [illegible] the Turks [illegible] possession of Sheik Said, but, warned by the French consul at Aden, the French [illegible] was immediately dispatched to protect the [illegible] of Sheik Said. Early in 1870 the firm of Rabaud & Bazin erected a [illegible] and began to lay in coal supplies. A few weeks later [illegible]

[illegible] Crimean war broke out, and England, having declared her neutrality, refused to allow French [illegible] at Aden. The French government [illegible] the purchase of Sheikh Said by making it a coaling station and a refuge for French warships. After the treaty of [illegible] Sheikh Said was [illegible]. England [illegible] Turkish authorities [illegible] French [illegible] a Turkish [illegible] in 1868 the Turkish government [illegible]

It is [illegible] of Sheikh Said [illegible] importance to France in view of [illegible] development of her colonies [illegible], and especially of [illegible] France's present occupation of the territory of Obock, on the west side of the Straits of [illegible] and the port of [illegible] very good [illegible] Sheikh Said [illegible]

The [illegible] Whatever [illegible] France [illegible] Turkish [illegible]*

[illegible]

[illegible], April 27, 1897.

GEOGRAPHIC LITERATURE

[illegible] Department of Labor. No. 9. Edited by Carroll D. Wright, Commissioner; [illegible] W. Weaver, Chief Clerk. Pp. [illegible]

Rand, McNally & Co.'s Road Map and Cycling Guide to Westchester County, New York. [illegible] New York [illegible] Rand, McNally & Co. [illegible]

Magnetic Declination in the United States. By Henry Gannett. From the [illegible] Annual Report of the U. S. Geological Survey. Washington, [illegible], with map and diagrams.

Statistical Abstract of the United States. 1896. Nineteenth number. Prepared by the Bureau of Statistics, under the direction of the Secretary of the Treasury. Pp. [illegible]. Washington, 1897.

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* In the [illegible] Atlas, London, [illegible], Sheikh Said is distinctly marked as a French possession. — [illegible]

The Foreign Commerce and Navigation of the United States for the year ending June 30, 1897. Prepared in the Bureau of Statistics, U. S. Treasury Department. Worthington C. Ford, Chief of Bureau. Vol. I, [illegible] vol. II, pp. 789-1462.

It is noteworthy that the bimonthly Bulletin of the Department of Labor [illegible] to present some useful contribution to the literature of economic geography. Two articles in the March number are worthy of note in this connection: The Padrone system and Padrone banks, by John Koren, and The Dutch Society for General Welfare, by Prof. J. Howard Gore, of Columbian University.

Nothing could better illustrate the extraordinary popularity of cycling than the preparation for the express use of wheelmen of the attractive little book of [illegible] roads of Westchester county, New York, recently issued by Rand, McNally & Co. [illegible] population of this interesting and delightful region [illegible] will no doubt fully justify the publishers in their venture, the publication [illegible] worthy of high commendation.

Henry Gannett, whose versatility of mind as a geographer, statistician, and diligent investigator in many other lines of scientific inquiry is constantly enriching our technical literature, has compiled for the Atlantic [illegible]

[illegible] relating to the variation of the compass. While the chief aim of the author has been to give the approximate declination for the year 1900 at 2,000 different points in the United States, he gives us an interesting historical review of the secular variation as well as the diurnal and various other changes to which the magnetic declination is subject.

The high standard of excellence that has characterized the publications of the Bureau of Statistics of the Treasury Department under Mr. Worthington C. Ford is fully maintained in the Report on the Foreign Commerce and Navigation of the United States for the fiscal year 1897 and in the new number of the Statistical Abstract. The latter is more comprehensive and correspondingly more valuable than ever before. [illegible] official [illegible] of the United States [illegible] provision made by Congress for its publication [illegible] careful analysis of such statistics [illegible] available [illegible] presentation of [illegible] form.

J. H.

GEOGRAPHIC SERIALS

The Journal of the Royal Colonial Institute for April contains a valuable paper on "The Dairy Industry in the Colonies," by Mr. Samuel Lowe.

The Scottish Geographical Magazine for April contains an excellent [illegible]

[illegible] "The Jesuits in South America," by Colonel [illegible]

The Geographical Journal for April contains several articles of interest, including "The First Crossing of South Georgia," by Sir W. Speirs; "Two Years' Travel in Papua (New Guinea)," by Lieutenant C. H. S. Vandeleur; "The Southern Coastlands of Africa," by Captain A. H. McMahon; "The Peace-Building Institute," by Colonel [illegible]; and "The Lucan Tour." The [illegible] of the volume is by Professor A. W. Andrews on "The Topography of Geography in Relation to History." The article has a special interest for readers of the National Geographic Society, inasmuch as it is in fact a discussion of information lately recently published.

The Journal of the Manchester Geographical Society, January–March, gives a [illegible] "The Jungle and Some of Its Inhabitants," a characterization of the Congo, by Rev. William Nelson. [illegible] the distinction between Sierra Leone and Liberia. Sir W. Wren contributes an article on the results of the Anglo-Egyptian expedition to Wau. The whole is accompanied by a clear picture of the Nyam Nyam and certain [illegible], by Major Hamilton Jackson. The work of the Church Missionary Society, Rev. W. [illegible], in a paper read at the Liverpool meeting of the British Association and published here. The Botany and Zoology of Uganda and other parts of Equatorial Africa [illegible] fact of papers by Rev. P. G. Scott and the Bishop of Uganda, [illegible] with an excellent contribution, [illegible], by General Sir Henry W. Norman.

The Proceedings of the Royal Geographical Society for the year 1908 [illegible] interesting and valuable papers. The first, entitled "Railways in Africa," by Major Darwin, describes not only the existing lines of railway, but the lines of water communication and the railways projected in the future. Dr. H. R. Mill's Presidential address on the "Aims of the Science Work and Training in Geography." [illegible] of an interesting paper. Mr. [illegible] writes the narrative of "A Journey in Persia," and Mr. W. A. T. [illegible] of "A Journey Toward Lhasa." Mr. J. C. Ewing Parkes gives a short description of "The Mineral Resources of the Imperial," and Mr. [illegible] for the Proceedings a "Description of the Kingdom of Chosen," written a year before [illegible] published from the [illegible] of Dr. [illegible], published in 1878. The [illegible] of the Society of the results of the Nansen's North Polar Expedition, by Professor [illegible].

The April Bulletin of the American Geographical Society is a geographical [illegible] Mr. Lorenzo [illegible] writes on "The Tax Laws of Consolidated Rate Companies," [illegible] the application of the Public Service Commission of New Mexico and Arizona. Dr. [illegible] H. Brown continues, in two and a half pages, the "Geographical Work in China" for the year 1908. Professor R. S. Tarr contributes a review of papers on "The Physical Geography of New York State." Mr. [illegible] Douglas gives a [illegible] "The Central Office of the Irrigation Congresses," and Mr. [illegible] Nichols contributes a paper upon the "Economic Importance of Geological and Physical Conditions in Tropical America." The Bulletin contains letters of Mr. F. E. Newell on [illegible] and a [illegible] bibliography of the [illegible] regarding forest reservations. The "Record of Foreign Geographical Literature" is [illegible] and Black's [illegible], [illegible] the [illegible].

[illegible]

SOCIETY, SESSION 1897-98

Special Meeting, March 29, 1897.—Fifth Monday evening of regular meetings. President in chair. Prof. [illegible], of the University of Central University, [illegible] on [illegible].

Regular Meeting, April 5, 1897.—Vice-President [illegible] in the chair. Mr. H. M. [illegible] of the Texas Western described [illegible] in spirit leveling by [illegible] showing the [illegible] of the U. S. Coast and Geodetic Survey [illegible]. Illustrations are presented in [illegible] diagrams.

Special Meeting, April 6, 1897.—State Meeting afternoon at [illegible] instead. President [illegible] in the chair. [illegible] Mr. [illegible] [illegible].

Special Meeting, April 13, 1897.—President [illegible] in the chair. Vice-President Merriam read a paper, which [illegible] of Geographic Investigations in Arizona [illegible].

Special Meeting, April 17, 1897.—President [illegible] Mr. [illegible] [illegible]. President [illegible] in the chair. Prof. [illegible] of Northern Arizona, [illegible] on [illegible].

Regular Meeting, April 19, 1897.—President [illegible] in the chair. The paper for the evening was read by Mr. [illegible] of the Mountain [illegible]

lation of the United States, by Henry Gannett, with maps and diagrams furnished by the author; and by Mr G. W. Littlehales on the Magnetic Compass in Modern Navigation.

Special Meeting, April 19, 1897.—Eighth Monday afternoon illustrated lecture. President Hubbard in the chair. Prof. W. H. Goodyear, of the Brooklyn Institute of Arts and Sciences, lectured on Venice. Illustrated.

Special Meeting, April 23, 1897.—President Hubbard in the chair. Dr T. C. Mendenhall, president of the Worcester Polytechnic Institute, lectured, with illustrations, on Weighing the Earth.

Special Meeting, April 26, 1897.—Ninth and last Monday afternoon illustrated lecture. President Hubbard in the chair. Dr Edward E. Hale lectured on America. After the lecture a number of colored illustrations of American scenery were thrown on the screen by Mr J. F. Murray.

Regular Meeting, April 30, 1897.—President Hubbard in the chair. Hon. Martin A. Knapp, Commissioner of Interstate Commerce, read a paper with illustrations on Some Economic Effects of Modern Methods of Transportation.

Elections, *March 26.*—J. M. Boutwell, Pay Inspector A. D. Bache, U. S. N., Col. A. M. Clapp, Lieut. G. B. Harber, U. S. N., L. T. Jerome, Louis B. Peck, Powhatan Robertson, Hon. S. D. Spears, Wallace Streater.

April 9.—Capt. John Cassaman, Rev. Asa S. Fiske, Miss L. S. Forrest, Lieut. J. M. Jenks, U. S. A., Mrs Porter King, W. A. McFarland, W. A. McKenney, Dr Joseph Roberts, Miss Grace C. Sheldon, Miss Mary A. Sprague, Andrew Tate, Jr.

Deaths.—Major Charles E. Bendire, U. S. A., Rear Admiral Richard W. Meade, U. S. N.

MISCELLANEA

The map of the United States published by the General Land Office in 1896 is intended to show the original territory of the United States and the several accessions made to it by purchase or otherwise. Among the mistakes perpetuated by this map is that of representing "Oregon," *i. e.*, the present states of Oregon, Washington, Idaho, and part of Montana, as a portion of the Louisiana purchase. This mistake is taken as a text by Colonel James O. Broadhead for a critical review entitled "The Louisiana Purchase: Extent of Territory Acquired by that Purchase," published by the Missouri Historical Society. Colonel Broadhead shows most conclusively that Louisiana extended on the northwest only to the rim of the Mississippi drainage basin. The conclusion is not a new one, but we are obliged to Colonel Broadhead for many new items of evidence. If anything were needed to settle the matter beyond peradventure, the proofs which he brings forward should be conclusive.

H. G.

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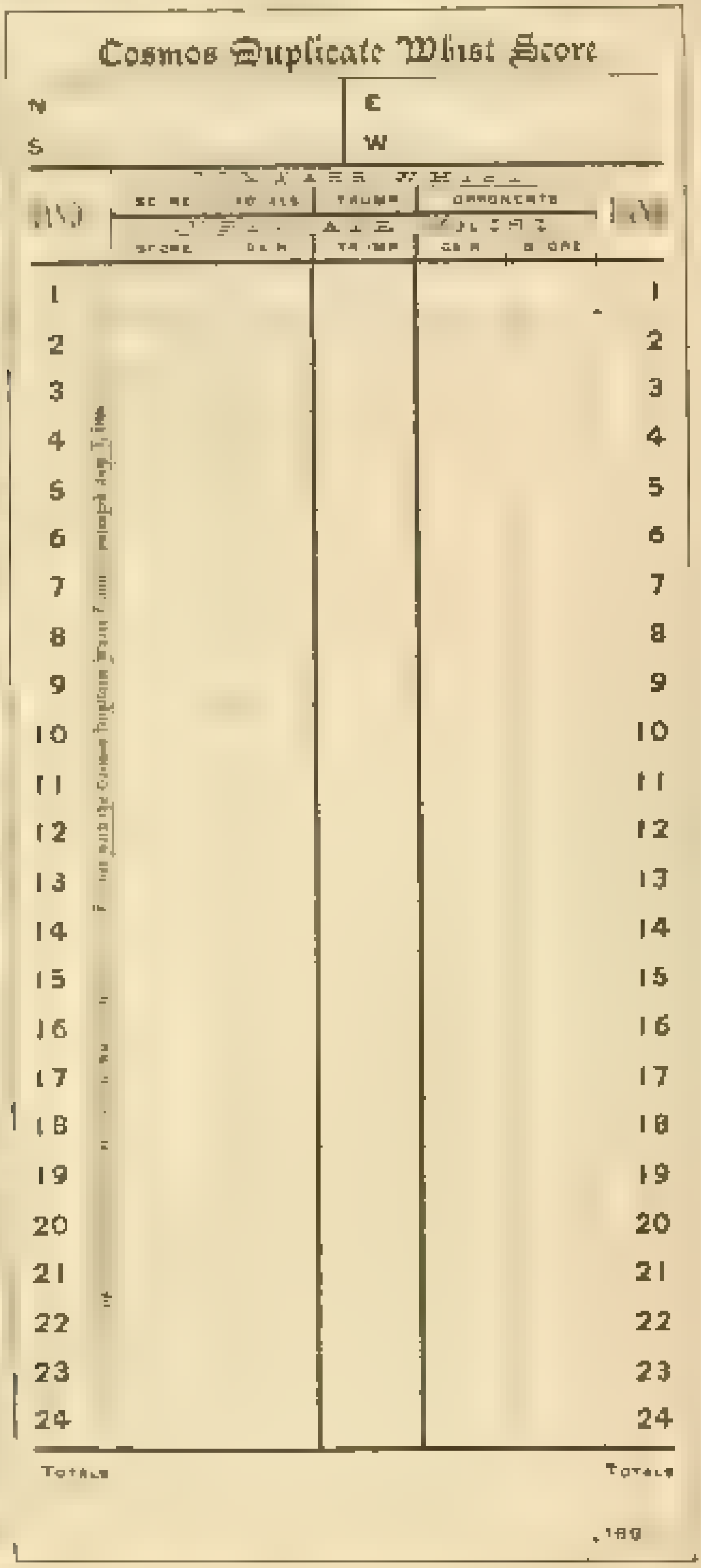

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